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cation with the interior by the river entailed lasting vexations on the Indians inhabiting its banks, who were compelled to serve as boatmen and carriers, subject to all kinds of contumely and unfair dealing. The consequence was that they also deserted the country. Formerly, while the settlements flourished and the Indians were numerous on the banks of the Polochic and the shores of the Gulf—when desolation did not as yet reign paramount as it does at present—it was customary for the Prior of Cobán to send to the coast to greet the missionaries arriving from Spain, and to take charge of them in their journey up the country. But at the present day no one would think of sending a messenger from Cobán to the sea-shore; nor would any missionary venture to traverse the unhealthy desert intervening, since those who enter it rarely survive to tell their safety. Yet we are informed that companies of Dominicans have at various times ascended to Cobán by the river Polochic, and certainly that route wants only practicability to be preferable to any other.

From the preceding description it will have been seen that the settlements in the elevated country, cold and very humid, are six in number, viz.:—Santa Maria Asuncion, of Tactic; Santa Cruz, de Santa Elena; San Cristobal Caccoh; the imperial city of Cobán; San Pedro Carchá; and San Juan Chamelco. The settlements in the warm and dry climate are four, viz.:—San Pablo Ravinál; Santiago Cubulco; Santa Cruz del Chól, and San Mateo Salamá; those in the region of great heat and humidity are San Augustin Lanquin, Santa Maria Cahbón, San Miguel Tucurú, and San Pablo Tamajum; making altogether fourteen settlements, now comprised in the province of Vera Paz. Two settlements which were established among the Polochic Indians, viz., Santa Catalina and San Andres, have disappeared; and two others, viz., Xocolo and San Pablo de Amatique, with New Seville, in the country of the Poconchics, have experienced a like fate.

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V.—*Notes on the Lake of Nicaragua and the Province of Chontales, in Guatemala.* By Chevalier EMANUEL FRIEDRICHSTHAL.

[THE disturbed state of Mexico having prevented M. Friedrichsthal from executing his original intention of travelling into California, he turned his steps to Guatemala, a country no less interesting than the preceding, and nearly as much distracted with intestine wars. He found the civilisation of Central America to be in a very low state of developement. Indolence is there the vice of all classes; and though public spirit is not absolutely

wanting, yet those who are animated by it have neither the union nor the energy requisite to enable them to cope with the ambitious disturbers of the public peace. A territory of 28,000 square leagues is there possessed by only two millions of souls; and this scanty number has diminished rather than increased during the discord and confusion of the last sixteen years.]

Under such circumstances, observes M. Friedrichsthal, the important question of a union of the two oceans (viz., the Atlantic and Pacific) has been entirely forgotten; and I believe that I do not err in asserting that Europe pays far more attention to this grand project than the inhabitants of Central America, wholly unacquainted as they are with the advantages of an extensive commerce and with the means of promoting it. It is also not to be expected that this state, with its limited resources, should ever be able to accomplish such a work; and it was therefore proposed, before the last war, to engage some mercantile houses of Paris in the execution of this project, the recompense consisting of tolls and 50 square leagues of land.

Some preliminary labours, executed in the first instance by order of the King of Holland, and afterwards by the Central Government, have not only proved the possibility of making the river St. Juan navigable, but have also been instrumental in discovering two points where the height of the Cordilleras is so inconsiderable as to allow a passage to be cut through them. At one of these points the immediate connexion of the Lake of Nicaragua with the Pacific might be effected by a channel of  $5\frac{1}{2}$  leagues long, S. of the town of Nicaragua. The intervening neck of land has only an elevation of 487 English feet above the level of the lake, which again, according to the official report of Bailey's measurement, is 128' higher than the Pacific.

The second route would lead from the above Lake, ascending the river Tipitapa,\* through the Lake Managua, towards the town of Leon, where mountains of a still less elevation than the above are to be cut, when a channel of 13 leagues long would lead into the Bay of Cochagua. But the realisation of the second plan would be much more expensive, as the Lake of Managua, which is 28' higher than that of Nicaragua, forms, at the place where it narrows itself into the river Tipitapa, a cataract, having a fall of 14 feet, which could only be surmounted by expensive locks. Nevertheless, the scheme of uniting the two oceans presents no difficulties which may not be readily overcome by the resources

\* The river joining the two lakes is named Panaloya by Mr. Lawrance, mate of H.M.S. Thunder, who in 1840 ascended the river St. Juan in a boat, made a brief survey of the Lake of Nicaragua, and crossed from Grenada to the shores of the Pacific, 22 miles distant. The results of his observations enrich the map accompanying this part of the Journal, the hydrographic details of which also exhibit much improvement.—ED.

of the age, or which are not light in comparison with the benefits likely to redound from its execution.

The province of Chontales, on the N.E. of Lake Nicaragua, presents in general a soil of alluvium, being an undulating country, without any very determinate character, furrowed by gullies and narrow runs of water, and dipping generally towards S.W. Porphyry appears but rarely at the surface.

The river which, according to some maps, is placed in the N. of the province, under the name of River of New Segovia, is called in the country Lama; and at the spot where the maps name it Rio Escondido, the Caribs call it Siquía. The length of its course may perhaps be 55 leagues. The depth of the river Tipitapa is from 9 to 21 English feet; its breadth, at an average, 100 yards. The city of New Guatemala, placed in some maps on the shores of the Pacific, lies 36 leagues N.E. from that point, in the interior of the country. Old Guatemala is 12 leagues from New Guatemala, towards the S.W. The extent of the adjacent Balsam-coast comprehends only the tract between Sonsonate and St. Vincent. The elevation of Old Guatemala may be about 5000 feet; its mean annual temperature is 68° Fahr. The Volcanoes de Agua y de Fuego (of water and fire), near that city, are 15,000 feet in height. The first,  $\frac{1}{2}$  league W., the second 1 league N.N.W. from the town. The latter rises a little higher than the former. The place called Mixco stands 3 leagues W. from New Guatemala, and about 500 feet higher. The Volcano Guanacaure has an elevation of about 3000 feet; Atillan, 25 leagues N.W. from Old Guatemala, 12,000 to 13,000 feet; Cosequinan, on the uttermost point of the isthmus, which surrounds the Bay of Conchagua to the S., 1000 feet; Nisalco, 2 leagues N.E. of Sonsonate, the most active of all, 1500 feet. Its explosions are not connected with a continued roaring, but with violent detonations, which may be heard from 20 to 50 times in twenty-four hours.

The island of Ometepe, in the Lake of Nicaragua, is formed of two cones of porous granite, which are connected by an isthmus 2 leagues long and  $\frac{3}{4}$  broad. Its entire length is 9 leagues; its breadth (measured across the eastern mountain, Las Maderas) 3 leagues; across the western mountain, de la Consuncion,  $2\frac{1}{2}$ . The former shows at long intervals an inward volcanic activity, manifesting itself by heaving and by a low grumbling; it is thickly wooded, much lower than the following, and is said to have on its summit a small fresh-water lake. The Cerro de la Consuncion has, according to my barometrical measurement, 5252 English feet elevation above the Atlantic;\* it is likewise

\* The measurements of Mr. Lawrance gave to the Peak of Madera 4190 feet, and to that of Ometepe 5050 feet above the lake; and as this is 128 feet above the Pacific, the

wooded, and on its western slope a savanna,  $\frac{1}{4}$  of a league broad, extends up two-thirds of its height: it is steep and has a beautifully conical form. The atmospheric precipitation on its summit is so great that we were wading deep in mud, and the trees teeming with wet. Its summit, divided into two low hills, embraces a lake 132 paces in circumference. This lake is girt at its N.W. side by a rocky wall 4 feet high, but in the rainy season it flows over to the W., and forms several falls, being supplied by its own springs.

The island contains two villages, named Ometepe and Muyagalpa. The first lies on the N.E. base of the Cerro de la Consuncion, and has 1000 inhabitants; the latter W.N.W. from the mountain,  $3\frac{1}{2}$  leagues from Ometepe, and has 350 souls. The whole population of the isle, including the dispersed haciendas, is 1700 souls.

I have found in the province of Chontales remains of ancient towns and temples, the idols of which are at several places half buried in the soil. The western shores of Lake Nicaragua, as well as the foot of Mount Bombacio, exhibit many traces of stone images, architectural ornaments, and vases. The islands of the Lake, especially Ometepe, seem to have served as sepulchres to surrounding populous towns, inasmuch as extensive Necropolises, or Cities of the Dead, are to be met with on them, corresponding in character with those of the ancient Mexicans.

VI.—*Journey from the City of Mexico to Mazatlan, with a Description of some Remarkable Ruins.* By M. J. LÖWENSTERN.

LEAVING the city of Mexico on the 24th of July, 1838, I proceeded the first day 7 leagues N. to the town of Guautitlan, formerly a Repartimiento (royal donation of land and Indians) belonging to the family of Alonzo de A'vila, one of the Conquistadores. From Guautitlan I arrived next day at Huehuetoca, an inconsiderable place, but interesting from its being near the Desague, or outlet of the waters from the valley of Mexico, which, though from its magnitude one of the most extraordinary works of art, is more like the bed of a torrent formed by nature than a channel cut by the hands of men. Thence to the rancho (small farm-house) of Bata, 4 leagues, and 4 more to Tula, anciently the capital of the Toltecs or Tultecs, the most ancient inhabitants of Mexico known to history.

mean height of which exceeds that of the Atlantic by 3·52 feet (Lloyd in Phil. Trans., pt. i., 1830), it follows that the two measurements of Ometepe differ only by  $70\frac{1}{2}$  feet.—ED.